
Channelrhodopsin-2 and optical control of excitable cells.

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Authors: Feng Zhang, Li-Ping Wang, Edward S Boyden, Karl Deisseroth

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Public Summary:

Scientific Abstract:

Electrically excitable cells are important in the normal functioning and in the pathophysiology of many biological processes. These cells are typically embedded in dense, heterogeneous tissues, rendering them difficult to target selectively with conventional electrical stimulation methods. The algal protein Channelrhodopsin-2 offers a new and promising solution by permitting minimally invasive, genetically targeted and temporally precise photostimulation. Here we explore technological issues relevant to the temporal precision, spatial targeting and physiological implementation of ChR2, in the context of other photostimulation approaches to optical control of excitable cells.

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